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bodies, but other cells, instead of possessing many diffused grains of chlorophyll, have a so-called chloroplast, a large flattened plate of coloring matter which incloses the nucleus." Of *Marchantia* we read: "Below and between each pair of rays the disk bears a perichaetium, i.e., the wrapper or involucre of a sporogone or female cell, which when fertilized by an antherozoid produces a mass of cells accompanied by elaters. The archegone itself thus becomes the spore case. These female organs are variously known as disks, receptacles, or inflorescences." Again, "On the upper surface of the thallus of *Pellia* may be seen, in both spring and autumn, small dots on either side of the midrib. These are very minute globular bodies attached by a slight thread to the subadjacent tissue. These bodies are known as antheridia or antherids, and may be compared with the stamens of flowering plants. From each antherid comes at maturity a mass of small spiral bodies, known as antherozoids (or spermatozoids), which may be compared with and play the part of the pollen of a flowering plant." Using *Pellia epiphylla* as an example, we find that "if we start with a spore, we shall find that it produces a thallus on which grow the archegones and the antherids, which by their union produce a fertilized ovum." There are many more such statements in the little book.—W. J. G. LAND.

NOTES FOR STUDENTS

Current taxonomic literature.—S. ALEXANDER (Rep. Mich. Acad. Sci. **13**:191–198. 1911) records the results of a continued study of the perennial species of *Helianthus*. The author finds distinguishing characters in the underground parts of sunflowers and incorporates these characters in a tabular synopsis of the Michigan species.—G. BEAUVERD (Bull. Soc. Bot. Genève II. **3**:253–260. 1911) under the title "Contribution a l'étude des Composées" has proposed a new genus (*Parantennaria*) founded on an Austrian species, *Antennaria uniceps* F. v. Müller.—O. BECCARI (Philip. Journ. Sci. Bot. **6**:229, 230. 1911) gives a list of plants of the island of Polillo, describing a new species of *Livistona* (*L. Robinsoniana*) and two new varieties in the genus *Areca*.—E. P. BICKNELL (Bull. Torr. Bot. Club **38**:447–460. 1911) in an eighth article on "The ferns and flowering plants of Nantucket" records further noteworthy plants and characterizes a new species of *Amelanchier*.—G. BITTER (Bot. Jahrb. **45**:564–656. *pls. 4–10.* 1911) has published a revision of the South American genus *Polylepis*, recognizing 33 species, 14 of which are new to science; the group has its greatest specific diversity in the north Andean region.—N. E. BROWN (Bot. Mag. *t. 8402.* 1911) describes and illustrates a new species of *Cladium* (*C. pubescens*) from Peru.—E. B. COPELAND (Leafl. Phil. Bot. **4**:1149–1152. 1911) describes 6 new species of ferns from the Philippine Islands.—S. T. DUNN (Kew Bull. 1911:362–364) has published a new genus (*Ostryoderris*) of the Leguminosae from tropical west Africa. The same author (Philip. Journ. Sci. Bot. **6**:315–317. 1911) gives a synopsis of the Philippine representatives of the genus *Milletia*, recognizing 11 species of which 3 are new to science.—P. Dusén (Archiv för Botanik **10**:no. 5. 1–5. *pl. 1.* 1911) describes and illustrates a new species of *Eryngium* (*E. ombrophilum*) from Brazil.—W. R. Dykes (Gard. Chron. III. **51**:18. 1912) has published a new species of *Iris* (*I. tenuissima*) from California.—E. L. Ekman (Archiv för Botanik **10**:no. 17. 1–43. *pls. 1–6.* 1911) under the title "Neue brasilianische Gräser" has published 19 species new to science and proposes a new genus (*Steirachne*) based on *Festuca pilosa* Nees.—A. W. Evans (Rhodora **14**:1–18. 1912) publishes the ninth article of a series devoted to New England Hepaticae; up to the present time 169 species of this group have been recorded from the New England states.—F. W. Foxworthy (Philip. Journ. Sci. Bot. **6**:231–287. *pls. 34–44.* 1911) presents an article entitled "Philippine Dipterocarpaceae," recording important data concerning this family and enumerating about 40 species, of which 4 have not been described hitherto.—R. E. Fries (Kungl. Svensk. Vetensk. Akad. Handl. **46**:no. 9. 1–72. *pls. 1–7.* 1911) presents the results of a monographic study of the genus *Petunia*, recognizing about 30 species of which 12 are new to science.—J. S. Gamble (Philip. Journ. Sci. Bot. **6**:289. 1911) publishes new species of *Schizostachyum* from Luzon, P.I.—J. M. Greenman (Ottawa Naturalist **25**:114–118. 1911) has published 4 new species and two varieties of Canadian Senecios.—A. A. Heller (Muhlenbergia **7**:85–95. *pl. 6.* 1911) in continuation of his studies on the genus *Lupinus* records 3 new species from Oregon and California.—M. A. Howe (Bull. Torr. Bot. Club **38**:489–514. *pls. 27–34.* 1911), in a paper on "Some marine algae of Lower California, Mexico," records 24 species of which 8 are new.—J. Hutchinson (Hooker's Ic. IV. **10**:*pl. 2929.* 1911) describes and illustrates a new genus (*Protomegabaria*) of the Euphorbiaceae from tropical Africa.—E. Janczewski (Bull. Acad. Sci. Cracovie 1910: pp. 67–91) has issued additional supplements to his monograph of the Grossulariaceae and includes several hitherto unpublished species and varieties from China.—P. B. Kennedy (Muhlenbergia **7**:97–100. *pl. 6.* 109–111. *pl. 8.* 1911) describes and illustrates a new clover (*Trifolium bolivianum*) from Bolivia and a new species of *Phlox* (*P. aciculifolia*) from Nevada.—F. D. Kern (Mycologia **3**:288–290. 1911) presents a second paper on "The rusts of Guatemala"; several species are recorded, including a new *Uromyces* parasitic on *Gouania domingensis* L. The same author (Bull. N.Y. Bot. Gard. **7**:391–483. *pls. 151–161.* 1911) under the title of "A biologic and taxonomic study of the genus *Gymnosporangium*" has published the results of a monographic study, recognizing 40 species of this genus.—K. Krause (Bot. Jahrb. **45**:657–660. 1911) describes 6 new species of Araceae from the Philippine Islands.—J. Lunell (Am. Mid. Nat. **2**:142–149, 153–164. 1911–1912) has described new species and varieties of flowering plants from North Dakota, Minnesota, and Florida.—R. Maire (Ann. Mycol. **9**:315–325. *pl. 16.* 1911) under the title "Remarques sur quelques Hypocréacées" has established a new genus (*Nectriopsis*) based on *Sphaeria violacea* Fr.—U. Martelli (Leafl. Phil. Bot. **3**:1109–1132. 1911) in an article entitled "Some Philippine Pandanaceae" has published 6 new species of *Freycinetia* and 7 of *Pandanus*.—W. A. Murrill (Mycologia **3**:271–282. 1911) in continuation of his work on the "Agaricaceae of tropical North America" treats seven genera with rose-colored spores, to which are referred 34 species, 21 of which are characterized as new. One new generic name is proposed, namely *Volvariopsis*, which is based on *Volvaria bombycina* (Schaeff.) Quél.—G. A. Nadson and A. G. Konokotine (Bull. Jard. Imp. Bot. St. Pétersb. **11**:117–142. 1911) describe and illustrate a new genus (*Guilliermondia*) of the Saccharomycetes.—J. A. Nieuwland (Am. Mid. Nat. **2**:129–142. 1911) under the title "Box-elders, real and so-called" proposes a new generic name (*Crula*) for several Asiatic trees, which have been regarded by most authors as congeneric with *Acer;* the first-mentioned species under the newly constituted genus is *C. cissifolia* (*Negundo cissifolium* Sieb.).—L. Quehl (Monats. für Kakteenk. **21**:154, 155. 1911) describes and illustrates a new species of *Mamillaria* (*M. Siedeliana*) from Mexico.—H. Rehm (Ann. Mycol. **9**:363–371. 1911) has published 26 new species of American and Asiatic Ascomycetes.—B. L. Robinson (Proc. Am. Acad. **47**:191–216. 1911) in continuation of his studies in the Compositae has published upward of 20 new species and varieties, chiefly from tropical and subtropical America. The paper also includes several new combinations with complete synonomy, as the result of careful investigations of the generic affinity of formerly misplaced species.—C. B. Robinson (Phil. Journ. Sci. Bot. **6**:299–314. 1911) in a second article on "Philippine Urticaceae" records 6 hitherto undescribed species of this family, and (*ibid.* 319–358) under the title "Alabastra Philippinensia" has published about 30 new species belonging to different families of flowering plants.—E. E. Sherff (Bull. Torr. Bot. Club **38**:481–482. *pl. 26.* 1911) places on record a new variety of *Carex* (*C. lupulina* var. *albomarginata*) from Michigan.—H. Sommerstorff (Oester. Bot. Zeit. **61**:361–373. *pls. 5, 6.* 1911) in a paper entitled "Ein Tiere fangender Pilz" describes and illustrates a new genus (*Zoophagus*) the affinity of which seems to be with the Saprolegniales; the fungus was discovered in Styria, Austria.—O. Stapf (Bot. Mag. *t. 8405.* 1911) describes and figures a new species of *Phyllodoce* (*P. amabilis*) from North America. The same author (Hooker Ic. IV. **10**:*t. 2927.* 1911) describes and illustrates a new genus (*Heteranthoecia*) of the Gramineae from tropical Africa.—F. Stephani (Sp. Hep. **4**:417–464. 1911) in continuation of his work on the Hepaticae includes in the foregoing pages 112 species of *Trullania*, 48 of which are new to science.—F. Stuckert (Anal. Mus. Nac. Bs. As. III. **14**:1–214. *pls. 1–4.* 1911) under the title "Tercera contribución al conocimiento de las graminácees Argentinas" records 369 species of grasses of which 20 are new. The identifications and the diagnoses of new species, varieties, and forms are by the eminent specialist Professor Eduard Hackel.—H. and P. Sydow (Leafl. Phil. Bot. **4**:1153–1159. 1911) record 11 new species of fungi from the Philippine Islands.—H. and P. Sydow and E. J. Butler (Ann. Mycol. **9**:372–421. *pl. 17.* 1911) under the title "Fungi Indiae orientalis" have recorded several new fungi and include the description of a new genus (*Meta-*

chora) of the Dothideaceae, found on the leaves of bamboo at Kanouth, Malabar.—A. WEBER VAN BOSSE (Ann. Jard. Bot. Buitenzorg II. **9**:25–33. 1911) under the title "Notice sur quelques genres nouveau d'algues de l'Archipel Malaisien" has published the following new genera: *Bryobesia* of the Chlorophyceae, *Mesospora* of the Phaeophyceae, *Exophyllum*, *Acanthochondria*, *Oligocladus*, and *Chalicostroma* of the Florideae, and *Perinema* of uncertain relationship.—H. F. WERNHAM (Journ. Bot. **49**:346. 1911) adds another new species from Costa Rica to the genus *Hamelia* recently revised by the same author.—A. ZAHLBRUCKNER (Ann. K. K. Naturhist. Hofmus. Wien **24**:293–326. *pls. 6, 7.* 1911) in cooperation with several specialists under the title "Plantae Pentherianeae" has published a list of plants collected in South Africa by Dr. A. PENTHER; the article includes a new genus (*Pentheriella* Hoffm. & Musch.) of the Compositae.—Different authors (Kew Bull. 1911:343–348) have published several species of flowering plants new to science of which 4 are from Mexico and South America.—J. M. GREENMAN.

Alternation of generations in Delesseria.—Alternation of generations among the red algae has begun to receive much attention, and a paper by SVEDELIUS[10] is one of the latest. The material for his investigation was collected at the Kristineberg Zoological Station, Bohnslän, Sweden, during November 1910. According to the account, in this species fertilization occurs in October, early in November the spermatangia are entirely washed off, tetraspore formation occurs in November, and both tetraspores and cystocarps mature during December and January. The time of his collection, therefore, was too late for securing material for sperm-formation and fertilization, so that there is no description of the male individuals of *Delesseria*, or of the development of procarp and fertilization.

The paper begins with an account of the development of tetrasporangia; then follow tetraspore formation, vegetative nuclear divisions in the tetrasporic plants, and vegetative mitosis in the female plants. Finally there is discussed the problem of alternation of generations in the Florideae. The nucleus of the tetraspore mother cell undergoes the tetrad division, which is preceded by synapsis and diakinesis. In the diakinesis stage 20 bivalent chromosomes are present; after both heterotypic and homotypic divisions, tetraspores are produced with 20 chromosomes; the vegetative nucleus of the tetrasporic plants has 40 chromosomes; and the vegetative nucleus of the female plants has 20 chromosomes. In the resting nucleus there are present chromatin granules whose number is much higher than the double number of chromosomes. In vegetative divisions some of these chromatin granules directly unite with one another and form chromosomes, with no appearance of a spirem thread period. In the heterotypic division all chromatin granules

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[10] SVEDELIUS, N., Ueber den Generationswechsel bei *Delesseria sanguinea*. Svensk. Bot. Tidskr. **5**:260–324. *pls. 2, 3. figs. 16.* 1911.